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10/050,427

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Domenico Pappalardo

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01/10/2005

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EXAMINER

DOLAN, JENNIFER M

ART UNIT

PAPER NUMBER

2813

DATE MAILED: 01/10/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/050,427

Applicant(s)

PAPPALARDO ET AL.

Examiner

Jennifer M. Dolan

Art Unit

2813

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 01 October 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-18 and 20-40 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-18, 20-25 and 31-37 is/are allowed.
- 6) ☒ Claim(s) 26-30 and 38-40 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 26-30 and 38-40 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 6,198,645 to Kotowski et al.

Regarding claim 26, Kotowski discloses a method of connecting a set of capacitors (C1-Cn) utilizing a plurality of switches (SW1-SW20) forming a switching network, the method comprising: accepting a voltage input signal at an input terminal (Vi; see figures 1-6); applying a series of phase signals (using 12) to the capacitors and switching network to separately couple any of the capacitors to the input and an output terminal (column 4, lines 26-67; column 5, line 65 – column 6, line 3) such that for any pumping operation any combination of the charge capacitors may selectively not be used to produce an output voltage different than the input voltage (see column 1, lines 25-33; column 2, lines 15-27; column 4, lines 30-40, 58-68; column 5, lines 1-25; figures 1-6).

Regarding claims 27 and 28, Kotowski discloses applying signals to switches coupled between two individual charge capacitors (figures 1-6), including switches between first and second capacitors, and second and third capacitors (see figures 3-6).

Regarding claims 29 and 30, Kotowski discloses applying a first signal to a first transistor (column 17, lines 25-30) to cause the capacitors to be coupled in a serial fashion (i.e., connecting the output signal from one capacitor to the input of another; figure 6C); and a second signal to a second transistor to cause the capacitors to be coupled in a parallel fashion (figure 6E; tables 2 and 3).

Regarding claims 38 and 40, Kotowski discloses a charge pump comprising: at least two charge capacitors (figures 1-6); and a switching network configured to separately couple and uncouple the capacitors to input and output lines such that for any pumping operation, any combination of the capacitors may not be used (see column 1, lines 25-33; column 2, lines 15-27; column 4, lines 30-40, 58-68; column 5, lines 1-25; figures 1-6).

Regarding claim 39, Kotowski discloses that the switching network comprises at least five switches (figures 1-6).

***Allowable Subject Matter***

3. Claims 1-18, 20-25, and 31-37 are allowed.
4. The following is an examiner's statement of reasons for allowance:

The primary reason for allowance is that the prior art fails to suggest a charge pump having multiple or variable stages, wherein each stage further comprises multiple capacitors and switches, such that either capacitor can selectively not be used. Although the prior art teaches configurable single stage voltage boosters having capacitors and switches arranged such that any combination of the capacitors may be used in either a parallel or serial fashion, such as U.S. Patent No. 6,198,645 to Kotowski et al., and the prior art additionally teaches variable stage

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charge pumps which can also be connected in either parallel or serial configurations (U.S. Patent No. 5,767,735 to Javanifard), there are no motivations or suggestions in the prior art of combining the two technologies, such that both the capacitor arrangement in each stage is fully configurable (serial, parallel, or omission of capacitors), and the stages as a whole can also be configured in serial or parallel arrangements. The prior art generally teaches that each method is a complete solution in and of itself, and needs no combination or modification for improving the flexibility of voltage boosting. Since there is no suggestion or motivation for combining these features, and since the combination of variable stage pump with configurable capacitor arrangements in each stage allow for even greater flexibility and range in voltage boosting, it is the examiner's opinion that such a feature is inventive.

### *Response to Arguments*

5. Applicant's arguments with respect to claims 26, 38, and 40 have been considered but are moot in view of the new grounds of rejection.

Insofar as the Applicant argues that these claims are allowable based on the Examiner's statements on allowability for claims 12-17 in the previous office action, the Examiner respectfully disagrees. The feature of a charge pump stage having switches configured such that any capacitors may selectively be omitted from the pumping operation was only indicated as allowable in combination with the other features of the claims, such as being a part of a variable stage charge pump. There was no indication given that such a feature is in and of itself allowable when separated from the context of a variable stage charge pump.

*Conclusion*

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. Patent No. 5,581,454 to Collins discloses a voltage converter circuit having switches configured such that any capacitor could be selectively omitted, or such that the capacitors can be selectively connected in a serial or parallel fashion (see figure 2b, especially).

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer M. Dolan whose telephone number is (571) 272-1690.

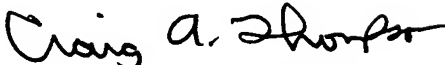
The examiner can normally be reached on Monday-Friday 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl W. Whitehead, Jr. can be reached on (571) 272-1702. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jennifer M. Dolan  
Examiner  
Art Unit 2813

jmd

  
CRAIG A. THOMPSON  
PRIMARY EXAMINER